both fixed and revolving, as well as the distance pieces between blades, are drawn to required section, cut to correct length, the material used being generally brass or bronze. The methods of construction of impulse blading vary to some extent and are described later.

In impulse turbines steel alloys, generally nickel steel, are used as blade material. Latest practice favours the use of " rustless steel ", with a view to reducing the risk of corrosion which has proved a serious trouble from time to time in impulse turbines, and the opinion is held that not only the composition of the material but also the degree of smoothness of the blade surfaces and edges has a bearing on the life of the blades.

The trouble can usually be traced to the presence of water or other impurities in the steam. Even when the steam is initially dry or superheated it will be found to be wet in the lower stages. The purity or otherwise of the feed-water is, of course, an important factor.

The problem is not often met with in reaction turbines owing to the lower steam velocities employed, and in fact such turbines have been opened up after more than ten years' running and have shown no sign of wear on the blading.

Governing.—The turbine speed is regulated by a centrifugal governor gear, driven from the main shaft.

All but small-size modern turbines are governed on the relay principle, that is to say, the movement of the governor is transmitted in the first place to an auxiliary oil- or steam-valve system, and the power required for actuating the main-throttle valve, &c., is obtained from an independent source—either an oil-pump or the main steam supply.

In this manner the work to be performed by the governor is reduced to a minimum, and the governor construction can be of the comparatively delicate nature required for sensitive action.

The governor is generally provided with a speed-variation gear, which allows a speed adjustment of about 5 per cent independently of the load. This gear can be hand-operated, and may be arranged for electrical operation by means of a small motor which can be controlled from the switch-board.

The valve system takes one of three forms. First, pure throttle control,

in which case the throttle-valve opening is adjusted by the governor through the relay over the full range of load. Second, combined throttle and nozzle control. Here the nozzle chest and plate are divided into a number of compartments, usually three, each of which is controlled by a separate valve and representing half, full, and overload respectively. Below half load the first nozzle valve only is open, and the throttle-valve opening varies from zero to full opening from no-load to half load. At full load the second nozzle valve opens, and the steam is then admitted to the second nozzle batch, the main throttle-valve opening being reduced to give a reduction in pressure corresponding to the increased nozzle area and increasing , again to full open at full load, at which stage the third or overload valve comes into operation. By this means a better pressure